

$$\textcircled{2} \Delta KE = KE_f - KE_i$$

$$= \left(\frac{1}{2} m_A v_{Af}^2 + \frac{1}{2} m_B v_{Bf}^2 \right) - \frac{1}{2} m v_i^2$$

$$= \left(\frac{1}{2} (1200) (5.7 \times 10^9)^2 + \frac{1}{2} (2400) (4.5 \times 10^9)^2 \right) - \frac{1}{2} (3600) (4.9 \times 10^9)^2$$

$$= (194.94 + 243 - 432.18) \times 10^{14}$$

$$= 5.76 \times 10^{14} \text{ J}$$

سؤال 10 - 40

لأن النظام مغزول حيث لا توجد قوى خارجية (انزلاق) ولا توجد قوى معيقة للحركة (سطح أملس) والنظام مغلق حيث يبقى الكتل كما هي.

$$v_{Ai} = 4.5 \text{ m/s}, x^+$$

$$v_{Af} = -1.9 \text{ m/s}, x^-$$

$$v_{Bi} = 3.2 \text{ m/s}, x^-$$

$$v_{Bf} = 3.7 \text{ m/s}, x^+$$

$$m_A = 0.28 \text{ Kg}$$

$$\textcircled{1} m_B = ??$$

$$\Delta P = \mathcal{E}P_f - \mathcal{E}P_i$$

$$= (m_A v_{Af} + m_B v_{Bf}) - (m_A v_{Ai} + m_B v_{Bi})$$

$$= ((0.28)(-1.9) + 3.7 m_B) - ((0.28)(4.5) + 3.2 m_B)$$

$$= -0.532 + 3.7 m_B - (1.26 + 3.2 m_B)$$

$$= -0.532 - 1.26 + 3.7 m_B + 3.2 m_B$$

$$= -1.792 + 6.9 m_B$$

$$+ 1.792 = 6.9 m_B$$

$$m_B = 0.259 \text{ Kg}$$

$$\textcircled{3} \Delta KE = KE_f - KE_i$$

$$= \left(\frac{1}{2} m_A v_{Af} + \frac{1}{2} m_B v_{Bf} \right) - \left(\frac{1}{2} m_A v_{Ai} + \frac{1}{2} m_B v_{Bi} \right)$$

$$= \left(\frac{1}{2} (0.28) (-1.9)^2 + \frac{1}{2} (0.259) (3.7)^2 \right) - \left(\frac{1}{2} (0.28) (4.5)^2 + \frac{1}{2} (0.259) (-3.7)^2 \right)$$

$$= (0.5054 + 1.778) - (2.835 + 1.33)$$

$$= 2.2834 - 4.165$$

$$= -1.8816 \text{ J}$$

سؤال (١١) م ٤٠

$m_A = 0.20 \text{ Kg}$, $v_{Ai} = 15 \text{ m/s}$, x^- , $v_{Bi} = 0 \text{ m/s}$, $m_B = 5.8 \text{ Kg}$

ما رتبة التصادم

$$\textcircled{1} v_f = ??$$

$$\cancel{KE} \Rightarrow \epsilon_i = \epsilon_f$$

$$m_A v_{Ai} + m_B v_{Bi} = (m_A + m_B) v_f$$

$$(0.20)(-15) + (5.8)(0) = (0.20) v_f + 5.8 v_f$$

$$-3 = 6 v_f$$

$$v_f = -0.5 \text{ m/s} \rightarrow 0.5 \text{ m/s} , x^-$$

$$\textcircled{2} \Delta KE = KE_f - KE_i$$

$$= \left(\frac{1}{2} m_A v_{Af} + \frac{1}{2} m_B v_{Bf} \right) - \left(\frac{1}{2} m_A v_{Ai} + \frac{1}{2} m_B v_{Bi} \right)$$

$$= \left(\frac{1}{2} (0.20) (-0.5)^2 + \frac{1}{2} (5.8) (-0.5)^2 \right) - \left(\frac{1}{2} (0.20) (-15)^2 + \frac{1}{2} (5.8) (0) \right)$$

$$= 0.75 - 22.5$$

$$= -21.75 \text{ J}$$

سؤال (١٢) م ٤٠

$m_A = 1 \text{ Kg}$, $v_{Ai} = 0.5 \text{ m/s}$, x^- , $m_B = 2 \text{ m/s}$, $v_{Bi} = 0.4 \text{ m/s}$, x^+

$v_{Af} = 0.7 \text{ m/s}$, x^+

$$\textcircled{1} v_{Bf}$$

$$\textcircled{2} \text{ نوع التصادم}$$

[2] V_f

$$I = \Delta p$$

$$9.6 = m v_f - m v_i$$

$$9.6 = 0.145 v_f - 0.145(0)$$

$$\frac{9.6}{0.145} = \frac{0.145}{0.145} v_f$$

$$v_f = 66.2 \text{ m/s}$$

[3] $\bar{F}$

القوة المتوسطة هي نفسها القوة المحصلة
لنفس الفترة الزمنية

$$I = \Sigma F \cdot \Delta t$$

$$I = \bar{F} \cdot \Delta t$$

$$9.6 = \bar{F} (1.2 \times 10^{-3})$$

$$\frac{9.6}{1.2 \times 10^{-3}} = \frac{\bar{F} (1.2 \times 10^{-3})}{1.2 \times 10^{-3}}$$

$$\bar{F} = 8 \times 10^3 \text{ N, x+}$$

كتاب التمارين ص 10

السؤال (1)

فرع (1)

بدون حزام الأمان إذا استخدم حزام الأمان

$$v_i = 2.7 \text{ m/s}$$

$$v_f = 0 \text{ m/s}$$

$$b = 2.5 \text{ s}$$

$$t = 0.2 \text{ s}$$

(F) مطلوب (F)

$$I = \Delta p = m v_f - m v_i$$

$$= m(0) - m(2.7)$$

$$= -2.7 \text{ F لازم انتطلع نفيش}$$

$$\frac{-135}{-10.8} = 12.5 \text{ F}$$

$$I = \Sigma F \cdot \Delta t$$

$$I = \Sigma F \cdot \Delta t$$

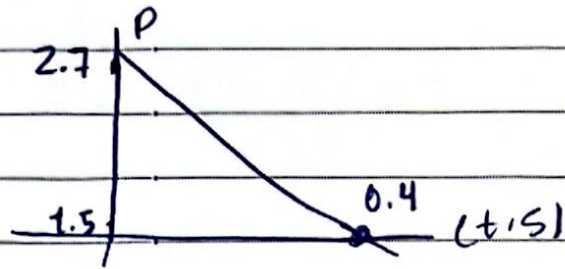
$$\frac{-2.7}{2.5} = \Sigma F \cdot \frac{2.5}{2.5}$$

$$\frac{-2.7}{0.2} = \Sigma F \cdot \frac{0.2}{0.2}$$

$$\Sigma F = -10.8, \text{ N}$$

$$\Sigma F = -135, \text{ N}$$

$$F_1 = F, F_2 = 5N$$



$$\begin{aligned}\Delta p &= p_f - p_i \\ &= 2.7 - 1.5 \\ &= 1.2 \text{ Kg.m/s} = I\end{aligned}$$

$$I = \Sigma F \cdot \Delta t$$

$$\frac{1.2}{0.4} = \Sigma F \cdot \frac{0.4}{0.4}$$

$$\Sigma F = 3N$$



سکھ گیلیں

$$\Sigma F = F + (-5N)$$

$$3 = F + 5N$$

$$F = 8N$$

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